

Abstract of the Disclosure

Provided is a field emission device using carbon nanotubes. The field emission device includes a substrate, a cathode, a gate insulating layer, an electron emitter, and a gate electrode. The cathode is formed on the substrate. The gate insulating layer is formed on the cathode and has a well exposing a portion of the cathode. The electron emitter is formed on the exposed portion of the cathode. The gate electrode is formed on the gate insulating layer and has a gate hole corresponding to the well. The gate electrode further includes a cylindrical electrode part that forms a focusing electric field from the gate hole toward a proceeding path of an electron beam. Accordingly, a focusing electric field can be formed around an electron beam emitted from the electron emitter so as to converge and focus the electron beam passing through the focusing electric field. As a result, color purity, brightness, and durability can be improved.